The Nature Conservancy
Protecting nature. Preserving life.

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July 18, 2018

Brig. General D. Peter Helmlinger
Commander, South Pacific Division
U.S. Army Corps of Engineer
1455 Market Street
San Francisco, CA 94103-1398

RE: Final Habitat Mitigation and Monitoring Plan (HMMP) Permit NO. SPL-2008-00816-MB
Rosemont Copper Project dated September 12, 2017

Dear General Helmlinger,

The Nature Conservancy respectfully submits the comments below concerning the mitigation actions proposed by Rosemont Copper Company along Sonoita Creek, Arizona. The founding of our Arizona Chapter was marked by the establishment of the Patagonia-Sonoita Creek Preserve in 1966, and this 890-acre nature preserve hosted the 50th year anniversary celebration of our conservation work in the State of Arizona in 2016. The mission of our global organization is to conserve the lands and waters on which all life depends. Each year, several thousand visitors come to the Patagonia-Sonoita Creek Preserve to enjoy this spectacular Southwestern oasis and its abundant wildlife.

However, we are concerned about the restoration methods and approaches included in the proposed mitigation plan. Further, we believe that certain aspects of this proposal could likely result in property damage to our long-term conservation investments just downstream within our Patagonia-Sonoita Creek Preserve. Our specific concerns, identified subsequently, are related to our review of the September 12, 2017, "*Final Habitat Mitigation and Monitoring Plan for the Rosemont Copper Project*" (HMMP), and the Environmental Protection Agency's (EPA) analysis of that plan, dated November 30, 2017.

First, we are extremely concerned that our name and planning documents were cited and interpreted in the HMMP without our consent or consultation. The HMMP (pages 7, 13-14) suggests that its proposed activities would positively address the Conservancy's goals and activities, and we do not agree with this statement. We have met twice with the applicant in recent months to make them aware of the Conservancy's concerns, and while the applicant has been willing to engage in discussions, we have been unable to reach any resolution. We hope to continue to discuss our concerns with the applicant throughout this process.

Based on very fundamental principles of geomorphology and stream hydraulics, we share the opinion of the Environmental Protection Agency (EPA) that **excavating a new channel with an unnaturally high degree of sinuosity, given the context within which it is located, would likely result in subsequent erosion, channel straightening, and sediment delivery to downstream locations**, including our nature preserve. This outcome is also predicted by the applicant in the HMMP: "The first rainfall-runoff event, and subsequent events, will result in changes to the channel geometry and bed composition as well as to the vegetative composition" (HMMP, p. 39). The proposed channel alignment appears excessively tortuous and the tight channel radii may promote bank erosion that increases the transport of fine

sediment, in particular, further downstream. Aside from predicting stream bed mobilization during even minor design flow events, the HMMP present no quantitative assessment of the sediment transport characteristics of Sonoita Creek in its existing or proposed design conditions. This proposed design would accelerate the transport of coarse and fine sediment downstream for many years, likely decades, until a new equilibrium is reached in the channel, depending upon the timing, duration and magnitude of future flood events.

The accelerated transport of fine sediments, in particular, would negatively affect the conservation values of our property, including the aquatic and riparian communities that support rare, threatened, and endangered species, along three miles of Sonoita Creek for which our property has been managed for over half a century as a nature preserve. The Patagonia-Sonoita Creek Preserve has an intact, fully-functioning riparian corridor which reduces flood velocities, enabling depositional processes that in an undisturbed system, promote conditions essential for riparian recruitment. However, a large increase in fine sediment delivery, due to the size of the proposed mitigation project upstream, has the potential to result in unprecedented volumes of deposition, potentially filling the active stream channel, and reducing the presence of surface water, as well as eliminating aquatic habitat required for fish. The preserve currently supports three native fish species: Speckled Dace (*Rhinichthys osculus*), Longfin Dace, (*Agosia chrysogaster*), and Desert Sucker (*Catastomus clarki*). Deposition of fine sediments can eliminate the specific habitat needs for several fish species present on our preserve, including Speckled Dace, which require gravel stream beds for spawning and use riffle habitat throughout their life cycle (Minckley and Marsh 2009).

We are also concerned about the potential impacts of the proposed mitigation project on the Huachuca Water Umbel, *Lilaeopsis schaffneriana* ssp. *recurva*, an Endangered plant species. It has designated Critical Habitat which includes 1.25 mi of Sonoita Creek in the vicinity of Cottonwood Spring near the town of Sonoita, upstream from the mitigation project site. A historic population from Monkey Spring, 7.5 mi NNE of Patagonia, appears to be extirpated. Our staff have recently confirmed two populations of Huachuca Water Umbel on our Patagonia-Sonoita Creek Preserve. As with fish, the predicted bed and bank mobilization of the overly-sinuous new channel on Sonoita Creek Ranch will lead to substantial deposition of fine sediment on the preserve which could bury these populations of small statured plants.

Lastly, the proposed channel design is based on the estimated 10-year discharge which is bracketed by other hydrologic estimates, however the HMMP lacks detailed analysis of the 100-year flood conditions, as required by the Santa Cruz County Floodplain and Erosion Hazard Management Ordinance (https://www.santacruzcountyaz.gov/DocumentCenter/View/5141/Floodplain-and-Erosion-Hazard-Management-Ordinace-2001). The Conservancy is keenly interested in the results of such an analysis, in terms of assessing the potential future impacts to our downstream preserve as a result of the inevitable larger magnitude flood events that will occur.

The Conservancy also share EPA's concern about potential **loss of the existing sacaton riparian grasslands**. Research by our science staff shows that community type is rare in the ecoregion, has been reduced to less than 5% of its original distribution, and is largely unprotected (Enquist and Gori 2008, Tiller et al. 2012).

The Vegetation Characterization Report (HMMP p. 499, Appendix F2 p. 13) reached the conclusion that "there is a well-developed and diverse community present along the current channel..." It noted significant cover of sacaton (*Sporobolus airoides* or *Sporobolus wrightii*) in every reach and terrace

sampled. The proposed mitigation project would place large volumes of excavated soil associated with new channel construction on top of existing high quality sacaton grassland and mesquite woodland riparian/floodplain habitat, causing a net loss of these very valuable, existing plant and wildlife communities.

We encourage the project applicant to both minimize disturbance to existing plant communities and commit to a more intensive revegetation effort with sacaton, both for its wildlife habitat value and its floodplain stabilization benefits. Sacaton restoration efforts have been the subject of significant conservation efforts, most notably on the nearby Las Cienegas National Conservation Area, managed by the Bureau of Land Management. Our experience with the restoration of sacaton grasslands in the Santa Cruz and San Pedro watersheds has proven that the establishment of new stands, especially by seeding, can be difficult. However, the salvage and replanting of existing plant material from the areas slated for disturbance may be far more effective in stabilizing disturbed floodplain soils, much more quickly.

Conclusion:
The Conservancy appreciates the need to protect Sonoita Creek Ranch from future development, both to maintain riparian and aquatic functions in the creek and to maintain wildlife connectivity between adjacent mountains. However, fundamentally, **the proposed mitigation plan does not benefit the conservation values in Sonoita Creek watershed, many of which the Conservancy, and partners, have been stewarding for more than 50 years. For this reason, we do not support the applicant's permit request.**

Finally, If the Army Corp of Engineers (ACE) issue the permit requested by the applicant the Conservancy respectfully requests that the permit require, at a minimum, the applicant to:

1. Commence monitoring for suspended sediment immediately upstream and downstream of the area where earthwork will occur within the floodplain, such that pre- and post-construction sediment load comparisons can be made over the coming decade. Discharge sampling will need to be made at these locations for analyses to determine what changes may have occurred in sediment transport; similar measurements will also be required at our preserve downstream.

2. Specify the sacaton planting density of 1.5 to 2 meters on center, based on the structure of mature sacaton stands. The monitoring of plant density and percent cover within sacaton stands before and after disturbance is also strongly encouraged.

Sincerely,

Daniel A. Stellar

Daniel Stellar
Deputy State Director

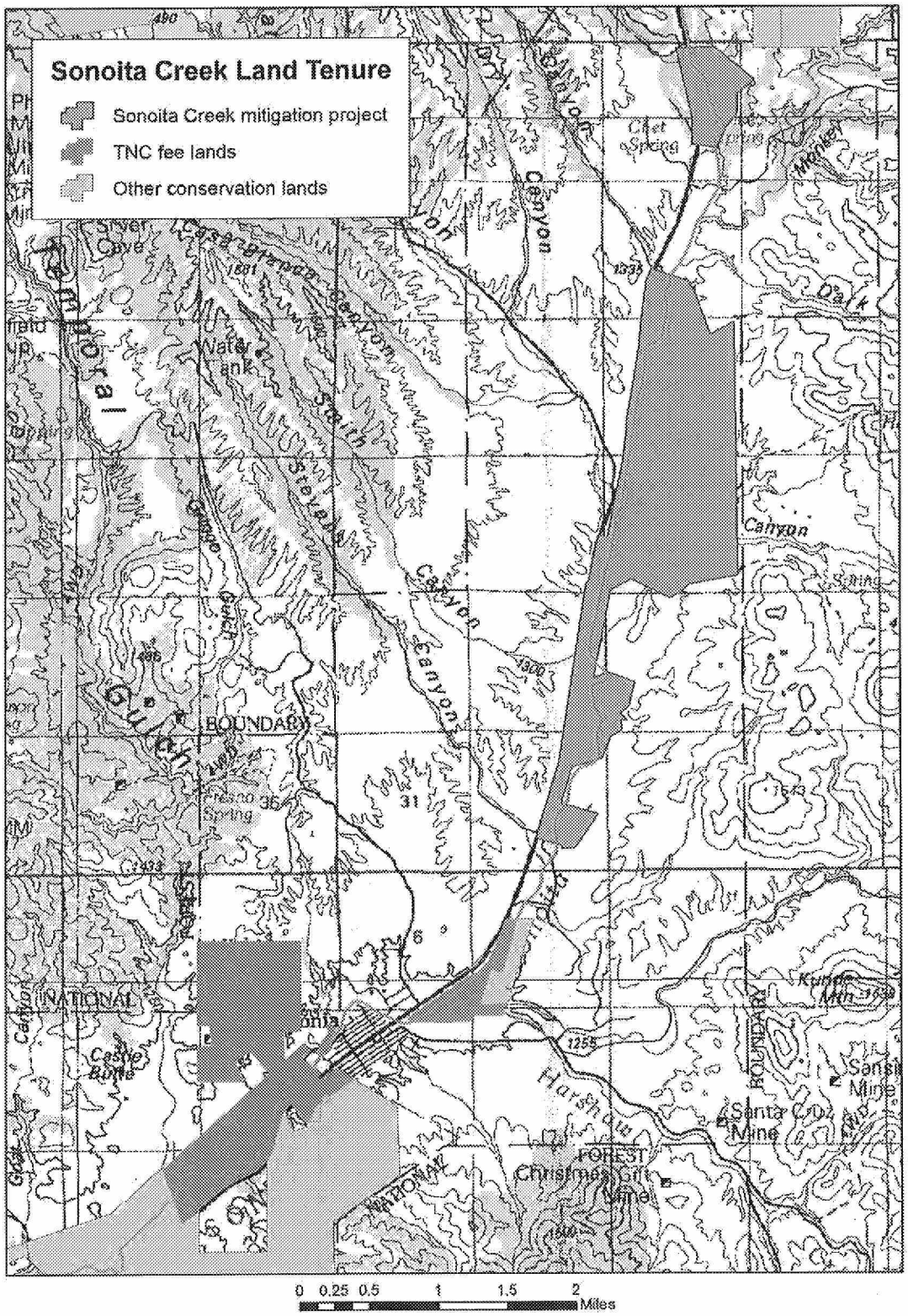
Cc: Deanna Cummings, U.S. Army Corps of Engineers
Elizabeth Goldmann, Environmental Protection Agency
William James, U.S. Army Corps of Engineers
Kathy Ann Arnold, Rosemont Copper Company

References

Enquist, C.A. and Gori, D.F. 2008. *Application of an expert system approach for assessing grassland status in the US-Mexico borderlands: implications for conservation and management.* Natural Areas Journal, 28(4), pp.414-428.

Minckley, W.L., and P.C. Marsh. 2009. Inland fishes of the greater Southwest: chronicle of a vanishing biota. University of Arizona Press, Tucson. 426 pp.

Tiller, R., Hughes, M. and Bodner, G. 2012. *Sacaton Riparian Grasslands: Mapping Distribution and Ecological Condition* using *State-and-Transition Models in Upper Cienega Creek Watershed.* In: Gottfried, Gerald J.; Folliott, Peter F.; Gebow, Brooke S.; Eskew, Lane G.; Collins, Loa C. Merging science and management in a rapidly changing world: Biodiversity and management of the Madrean Archipelago III and 7th Conference on Research and Resource Management in the Southwestern Deserts; 2012 May 1-5; Tucson, AZ. Proceedings. RMRS-P-67. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 410-424.



The Nature Conservancy (TNC) private lands include 3 miles of Sonoita Creek near Patagonia, Arizona, all downstream of the proposed mitigation project. The Conservancy also holds conservation easements on additional lands in the area, as does the Arizona Land and Water Trust, all with the purpose of maintaining and restoring natural habitat conditions along the creek and adjacent uplands.